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5. **HARDWOOD PINS.**—In pinning frame buildings together, such as barns, bridges, timber roofs, etc., is it better to use dry hickory than that which is green or partly seasoned?—A. P. G.

### Correspondence.

#### Mansard Hips.

*To the Editor of the Illustrated Wood-Worker:*

Let "A Subscriber" try the following to get the curve of a hip rafter: Fig. 1, Plate 7, is the common rafter, A B the seat, C D the seat of the hip (an angle of 45°). Make as many points on the curve of the common rafter as you like, and from those points drop plumb ordinates cutting C D; transfer C D with all the points thereon to a level line, as C D, Fig. 2, and from those points erect plumb ordinates each of the same length as its corresponding number in Fig. 1, and the points thus found are points on the curve of the hip. This may be old for all I know, but it is good and reliable.

ALONZO.

BOSTON, Nov. 14, 1878.

### Technical Education.

It has become quite the thing of late to write concerning the great necessity that exists for an improvement in the technical education of the masses, and as a result the inquiry is now by no means infrequent, What is technical education? We intend in the present and future issues of this paper to answer this query by giving our readers an opportunity to cull from our pages such information as will convince them as to what is technical education. The plasterer who burns his lime, slakes it, mixes it with sand, and finally makes it into mortar, may thoroughly understand the mechanical processes by which the raw stone is converted into mortar; and, therefore, be a practical "hand" in the manufacture of mortar; but how few plasterers there are that understand the chemical change that takes place in the constituents they employ. Again, the painter possibly knows nothing of the chemical constituents of the various substances he uses, or the reason why such and such effects are produced by the materials he employs. How much better workman he would be if possessed of that knowledge, must be evident to the least observant. A knowledge of the "why," in every branch of trade, would be of immense service to all concerned in the work, and the superior intelligence of the workman would most assuredly enhance the value of the work produced, as it would bear the impress of

superior skill and workmanship, and increase his value as a workman.

Chemistry, mining, geology—science and art—should go out together into all our cities, towns, and hamlets, assisted by government subsidies. No money could be better spent, for technical education would then become general, workmen more valuable, foreign competition from any point reduced to a minimum, the "level" of wages would become an obsolete phrase, and the chances of strikes all but impossible. It would also soon be observed that "waste" in all trades would be greatly reduced in quantity; and thus for the expenditure of a few thousands a year, for say the next ten years, there would ensue to the nation a gain of millions. This would be a casting of the bread on the waters productive of a safe return.

No doubt the stimulus given to the study of art and science since the Centennial Exhibition has been productive of immense material results; it may safely be asserted that the spreading of the knowledge of chemistry, geology, and mechanics amongst the working and the growing youth of the population would be twenty times more productive.

Something should be done in this direction before long, and we hope that our legislators will lay aside their political squabbles for a time, and wrestle with something that will be of real and lasting good to the nation. It is all very well to tell the workman that he possesses the franchise, and should therefore rest content; politically, this is but a poor substitute for the strength and blessings that education bestows.

### House-Planning.

If persons who are about to have houses erected, either for their own use or for the use of their tenants, would give the subject as much thought as they would expend on any other equally important subject, there would be fewer badly constructed and ill-devised than there now are. Each family, for organic and numeral reasons, requires a house different and distinct in appointment and character from that of any of its neighbors. It is quite true that families, different in characteristics, may live and enjoy a certain amount of comfort in similarly constructed and appointed houses, but this apparent enjoyment is obtained at the expense of overwork or inconvenience of some one or more of the members of the household. When the houses are rented, this overwork or inconvenience cannot well be avoided, but it may be mitigated by a little foresight and ingenuity on the part of the members; but, in a new house, built for the persons who are

to occupy it, and subject to their will, there can be no excuse for incongruity of arrangement or inconvenience of appointment.

It is the duty of the head of the household, when preparing to build, to take into consideration the tastes, peculiarities, and requirements of each member, and shape his building to suit these various conditions, always making provision for the natural and inevitable changes which are likely to take place in his family. For, if he does his whole duty, he is not to forget that it is his interest to study the convenience and welfare of his "help," both male and female; for it must always be understood that the monarch of the kitchen holds the health of the inmates of the house in his or her hand; it must be obvious, then, that it is of paramount importance to furnish this culinary potentate with all the required improvements of the age, and to remove as far as possible every inconvenient and irritating condition from his domain. Hired "help" of every kind increases in value and efficiency as its surroundings increase in taste and convenience, and the custom of locating the kitchen in the most inconvenient and inaccessible part of the house, and relegating the "help" to sleeping-rooms over furnaces, ranges, or sky-high garrets, is pernicious and unwise, and must in the nature of things result in loss of service, irritation, and dissatisfaction to all concerned, though the source of trouble may oftentimes not be known or recognized.

After the plan and appointments have been fairly considered and discussed by the whole household, a sketch may be prepared by the prospective owner, which may be again submitted to the family council, and such alteration, changes, or additions made as the combined wisdom of the council may see fit; when the whole may then be handed in to an architect of experience, who will be able to give such further hints and suggestions regarding the plan that may prove acceptable and of value.

Having reached this stage, the balance may safely be left with the architect, whose duty it will be to harmonize the whole work, and give each idea a tangible shape, and so place every thing shown in the sketch in order, and in accordance with accustomed usage.

### To Cut Glass without a Diamond.

CARPENTERS, joiners, and cabinet-makers are frequently called upon to fit glass to frames or sashes where no glass has been prepared to suit; under such circumstances it would be well to know how to cut glass to answer their purposes, without the aid of a diamond. Many persons may not be aware that glass can be cut under water with great ease, to almost any shape, by simply using

a pair of shears or strong scissors. In order to insure success, two points must be attended to: first, and most important, the glass must be kept quite level in the water while the scissors are applied; and secondly, to avoid risk, it is better to begin the cutting by taking off small pieces at the corners and along the edges, and so reduce the shape gradually to that required, as if any attempt is made to cut the glass all at once to the shape, as we should cut a piece of card-board, it will most likely break just where it is not wanted. Some kinds of glass cut much better than others, the softer glasses being the best for this purpose. The scissors need not be at all sharp, as their action does not appear to depend on the state of the edge presented to the glass. When the operation goes on well, the glass breaks away from the scissors in small pieces in a straight line with the blades. This method of cutting glass has often been of service, when a diamond has not been at hand, for cutting ovals and segments, and though the edges are not so smooth as might be desired for some purposes, yet it will answer in a great many cases. The two hints given above, if strictly followed, will always insure success.

### Workshop Management.

FREDERICK SMITH, an Englishman, has written a book on this subject, in which he makes the following among other points, as described in a review. Not every one who owns or has charge of a workshop knows, or cares to know, upon what principles it should be conducted in order that success may accrue. Indeed, we do not hesitate to say that the incompetents are largely in the majority. Too often proprietors, so that they get an income which means a handsome interest on capital invested, an easy life, and some dignity, do not trouble themselves to inquire closely how the details of their business are being carried out; and as a result petty tyranny often flourishes, and frequently dissimulation and dishonest practices grow apace. The teaching that employers owe to their workpeople, the duty of watching their condition, is not sufficiently recognized, and the consequences are found in diffidence and contentions. Now, to ignore this duty is unwise as well as improper, for where the employer evinces little or no interest in his people—is rarely seen by them, and more rarely heard as counsellor—the belief forces itself that there exists indifference and selfishness, and corresponding qualities spring up on the other side. Demoralization is then rapid. "Give the least you can for the most you can get" becomes a guiding principle. What follows is depreciation of profits, and where drastic remedies are not applied, crip-